## ABSTRACT

First and second electrodes at opposite ends and magnets between the electrodes define an enclosure. Inert gas (e.g. argon) molecules pass into the enclosure through an opening near the first electrode and from the enclosure through an opening near the second electrode. A ring near the first electrode, a plate near the second electrode and the magnets are at a reference potential (e.g. ground). The first electrode is biased at a high voltage by a high alternating voltage to produce a high intensity negative electrical field. The second electrode is biased at a low negative voltage by a low alternating voltage to produce a low intensity negative electrical field. Electrons movable in a helical path in the enclosure near the first electrode ionize inert gas molecules. A wafer having a floating potential and an insulating layer is closely spaced from the second electrode. The electrode and the wafer define plates of a first capacitor having a dielectric formed by inert gas molecules and ions between the plates to provide a high impedance. The wafer and the inert gas ions in the enclosure define opposite plates of a second capacitor, in series with the first capacitor, having the insulating layer as the dielectric to define a low impedance. The first capacitor accordingly controls and limits the speed at which the gas ions move to the insulating layer surface to etch this surface. The resultant etch, only a relatively few Ångstroms, of the insulating layer is smooth, uniform and accurate even in sockets as for vias.